Part A. CONCEPT NOTE

Name of applicant:	IREN Acqua Gas
Nationality of applicant	Italian
EuropAid ID number[1]	IT-2010-GSI-2409544967
Legal Entity File number (if relevant)[2]	6000221582
Registration Number (or equivalent)	01571510997
Date of Registration	17/06/2005
Place of Registration	Genova – Italy
Official address of Registration	Via dei SS.Giacomo e Filippo, 7 – 16122 Genova GE
Country of Registration	Italy
Title of the action	*Water Supply and Management Improvement in Bissau*
Location of the Action - ***Specify the countries in which the Action will take place***	ACP country: Guinea Bissau
Beneficiary Partner 1 - ***add as many rows as beneficiary partners***	Name: EAGB EuropeAid ID nr (if available)[3]: Nationality: Guinea Bisssu Type of actor: ACP water and sanitation utility
Implementing Partner 1 - ***add as many rows as implementing partners***	Name: University of Genoa EuropeAid ID nr (if available): Nationality: Italian Type of actor: other water sector organization
Implementing Partner 2 - ***add as many rows as implementing partners***	Name:D'Appolonia SpA EuropeAid ID nr (if available): Nationality: Italian Type of actor: other water sector organization

1 This number is allocated to an organisation which registers in PADOR. For more information and to register, please visit http://ec.europa.eu/europeaid/onlineservices/pador/index_en.htm

2 This applies only to those applicants that have already signed a contract with the European Commission.

3 Provide this information only if the organisation has already such EuropeAid ID. At the Concept Note stage there is no obligation for implementing, beneficiary or supporting partners to register in PADOR.

Implementing Partner 3 - *add as many rows as implementing partners*	Name: PS76 ONLUS EuropeAid ID nr (if available): Nationality: Italian Type of actor: other water sector organization
Implementing Partner 4 - *add as many rows as implementing partners*	Name: Litostroj Power EuropeAid ID nr (if available): Nationality: Slovenian Type of actor: other water sector organization
Implementing Partner 5 - *add as many rows as implementing partners*	Name: Lusagua Serviços Ambientais (Aquapor Group) EuropeAid ID nr (if available): Nationality: Portuguese Type of actor: other water sector organization
Supporting Partner 1 - *add as many rows as supporting partners*	Name: AST Sarl EuropeAid ID nr (if available): Nationality: Guinea Bissau Type of actor: NSAs
Supporting Partner 2 - *add as many rows as supporting partners*	Name:Guinea Bissau Government (Energy Ministry) EuropeAid ID nr (if available): Nationality: Guinea Bissau Type of actor: ACP national governments
Total eligible cost of the action (A) in €	*1.310.000 €*
Amount requested from the European Commission (B) in €	*969.400 €*
% of total eligible cost of action (B/A x 100)	*74 %*
Total duration of the action in months:	*36 months*

Applicant Contact details for the purpose of this action:	
Postal address:	Via SS. Giacomo e Filippo, 7 – 16122 Genova GE
Telephone number: Country code + city code + number	+39.010.5586.865
Fax number: Country code + city code + number	+39.010.5586.847
Contact person for this action :	Nicola Bazzurro
Contact person's email address :	nicola.bazzurro@irenacquagas.it
E-mail address of the Organisation	info@irenacquagas.it

Website of the Organization	www.irenacquagas.it

Any change in the addresses, phone numbers, fax numbers and in particular e-mail, must be notified in writing to the European Commission. The European Commission will not be held responsible in case it cannot contact an applicant.

WATER SUPPLY AND MANAGEMENT IMPROVEMENT IN BISSAU (GUINEA BISSAU)

1 - RELEVANCE OF THE ACTION

GENERAL PRESENTATION OF THE ACTION

The objective of this project is to develop a water supply service of high quality, continuous in time and efficient in Bissau, the capital of Guinea Bissau. The city, of about 600,000 inhabitants (more than one half of the entire population of the country), is located on the shore of the Rio Geba, the largest of the many estuaries in Guinea Bissau that deeply penetrate into the continent.

Bissau has a water supply system extracting groundwater from 12 wells about 200-250 m deep; the aqueduct feeds eight major deposits, from which a distribution network with a total length of about 230 km branches off. The water extraction from the aquifer is made by electric submersible pumps (total installed capacity of about 265 kW), supplied by Bissau power grid; the electricity is produced by diesel generators, whose supply is not ensured for the entire day and often lacks for some consecutive days. Given the importance of the city, in terms of population, economic and policy, the proper functioning of a "basic" service as the drinking water supply is undoubtedly essential for the capital and country development. The basic idea of the present proposal is to achieve this target by:

- improving system maintenance, including leakages reduction;
- producing the amount of electricity necessary to pump groundwater through the exploitation of tidal energy.

From this latter perspective, Guinea Bissau offers high potential: the tidal range due to the principal lunar semidiurnal constituent on the coast of the country is the highest along the West African coast; moreover, geographic characteristics and the presence of tidal estuaries increase the tidal range to significant values (the maximum registered is 6.80 m in Porto Gole, along Rio Geba).

The project will be based on the currently available set of data and knowledge, related to:

- a Master Degree final thesis studying the different technologies for power generation by tides and some applications envisaged in Guinea Bissau;
- the knowledge of the region and of its socio-economic background, thanks to the completion of several projects by the ONLUS PS76, a project partner;
- tidal current measurements carried out in the "Arquipelago dos Bijagos", along the coast of Guinea-Bissau;
- well-established collaborations with various local actors:
  - Guinea Bissau Energy Ministry official,
  - EAGB, water supply authority,
  - AST Sarl, building company.

RELEVANCE OF THE PROPOSAL IN RELATION TO NEEDS AND CONSTRAINTS OF WATER SECTOR IN THE REGION OF BENEFICIARY PARTNERS

The lack of drinking water supply in adequate quantity and quality in a Country with an aquifer a few meters below the ground represent a local constraint to water management and governance improvement potentials. While in the countryside people have wells supplying fresh water, in the city the shallow wells can be used only in the periphery and for non-drinking use, due to pollution conditions.

The above critical situation may be resolved with a simple intervention that really frees the city energy supply from oil dependence. This can be achieved taking advantage of tidal energy, accessible not only along the coast but also along the many estuaries that deep penetrate into the continent for hundreds of km.

At the same time "good practices" of management, especially regarding systems of regulation and control of distribution, may provide an effective answer to the needs and constraints of Bissau water sector.

RELEVANCE OF THE PROPOSAL TO THE SPECIFIC OBJECTIVE AND PURPOSE OF THE CALL

The first action of this proposal (Action 1 - water management optimization and good practices dissemination) fully matches the following objectives, in the framework of which the Call has been issued:

- contribute to improve water governance and management of water resources;
- contribute to developing and implementing local water and sanitation strategies;
- system maintenance and improvement, including leakage reduction;
- good governance and integrated water resource management.

The Action 2, concerning the production of the amount of electricity necessary to pump groundwater through the exploitation of tidal energy, matches the following objectives:

- sustainable development and maintenance of water infrastructure;
- expanding drinking water access to inhabitants of Bissau, especially in poor conditions.

Moreover, the project in its general features is aimed to accomplish:

- infrastructure developments;
- knowledge transfer trough specific training courses and capacity development activities;

– regional level replicability.

IMPLEMENTING NATIONAL WATER STRATEGIES

Guinea Bissau strategies concerning environment have been developed with input of expert advice and, above all, with the assistance of technicians that, in the years after independence, studied abroad and applied in their country their qualified knowledge.
These strategies deal especially with agriculture and with the particular marine environment of the country: unique animal species, such as the salt water hippopotamus and some sea turtles, are preserved by the "Instituto Biodiversidad peels and Areas Protegidas", a Government agency which has so far enjoyed the self-financing and implemented an operational policy in the country.
In the same way, providing the water management system and in particular water supply authority of financial independence will allow the realization of existing projects concerning Guinea Bissau water and sanitation sector.

LOCAL NON STATE ACTORS INVOLVEMENT

Bissau inhabitants will be the primary beneficiaries of the project and are going to be involved indirectly thanks to the improvement of life conditions in the capital and in the case of new working position connected to this proposal.
AGB (Bissau water supply authority) technicians are going to be directly involved in the project realization as local partners and principal accomplisher; they will learn better aqueduct management techniques and improve their employment status.
Finally AST Sarl and other small building company will be involved in the infrastructure development and realization provided by the proposal.

2 - EFFECTIVENESS AND FEASIBILITY OF THE ACTION

ANALYSIS OF BENEFICIARY PARTNERS NEEDS AND SELECTION OF MANDATORY RESULT

As previously stated, the lack of drinking water in adequate quantity and quality in Bissau is due to the pollutions of the aquifer a few meters below the ground and is a consequence of the lack in energy supply (produced by diesel generators). This problem can be resolved by:

– improving system maintenance, including leakage reduction (Action 1)
– producing the amount of electricity necessary to pump groundwater through the exploitation of tidal energy (Action 2).

DESCRIPTION AND EXPECTED RESULTS OF THE PROPOSED ACTIVITIES

Action 1: Water management optimization and good practices dissemination

The experience achieved in Europe by the proposers will be repeated in Bissau, indicating "good practices" of management, especially regarding methods and technologies to detect and repair leaks in pipes. These management criteria (implying water and energy savings) will attain savings in water and consequent increased availability to users. Techniques and facilities to identify and reduce losses in the distribution network will therefore be designed and implemented.
These good practices will be identified in detail in relation to specific situations existing in Bissau and based on information investigated with EAGB.
The aforementioned good practices will include the International Water Association (IWA) methodology for leakage management, developed and continuously updated by the IWA Task Force Water Losses. It includes network performance indicators (based on network volume balance), network pressure management, active leakage control, including adequate technologies for leaks detection and their quick repairs.
Specific training activities will be organized and delivered both in classroom and in the field, allowing trainees to learn about theoretical aspects and practical ones, the latter including practical demonstration of devices for leakages detection and the installation of instruments to match network volumes and users requests. Training activity will deal also with methodologies and instrumentations to detect variations in the network leakages rate.
Training activities and a proper dissemination of best practices will allow managers and technicians of local water utility to be more aware about potential benefits deriving from best available technologies application.

Action 2: Water supply improvement in Bissau municipality

This action will be divided into 7 main stages.

1) Assessment of Bissau water supply system current technical conditions

The following information will be collected through on-site surveys and meetings with relevant stakeholders:

– number, type and location of existing pumps that extract ground water;
– groundwater level and its possible seasonal fluctuation;

- pumped water flow and any fluctuation during the day or season;
- identification of the pipe network for water delivery;
- number, size and location of storage tanks.

Once this information has been acquired, the pumps energy requirements can be assessed with sufficient accuracy and the replacement (or the integration) of existing energy production system from fossil fuels with technologies exploiting a renewable and nonpolluting source can be planned.

2) Definition of key aspects of tidal turbines

The second stage of the project will consist in selecting the plant type and the characteristics of the turbine, which represent a key technical challenge of the project.
The choice between the types of plants depends on many technical aspects, such as:

- the water supply system energy needs;
- the availability of suitable sites for the two options;
- environmental constraints;
- the values of current velocity and tidal range, etc.

Once the most adequate type of plant has been determined, a thorough investigation aimed at identifying the optimal turbine prototype will be carried out.

3) Identification of one or more suitable sites for installation of tidal plants

During this phase the following aspects will be carefully evaluated:

- the site hydrodynamic characteristics (in terms of current velocity and tidal range);
- the geological, geotechnical and morphodynamic properties of shores and bottom;
- the environmental features of the site (flora, fauna, ecosystems);
- the distance between the site (or sites) of power generation and the pumping stations.

4) Technical feasibility of the project and estimated production of electricity

Once the production system, the type of turbine and an appropriate set of possible sites have been identified, the technical feasibility of the project will be assessed in detail and its output in terms of installed capacity and produced energy will be estimated. In this regard we remark that, in contrast to other renewable energy sources, tides can be regularly predicted for centuries into the future; thus power outputs can be accurately calculated far in advance and energy security can be easily assured for the final users.

5) Preparation of a Master Plan for Bissau Municipality Water Supply System Feeding

All the investigations described above will be properly collected and summarized, with the aim of developing a master plan identifying:

- some feasible locations and plants (specifying the related energy production systems, types of turbine, achievable energy output, environmental impact);
- benefits in terms of security and efficiency in the drinking water supply system;
- economic and environmental benefits from the use of a renewable energy source;
- any problems and uncertainties associated with the development of the project.

In addition, in order to disseminate the achieved knowledge and experience, the project group will carry out a preliminary study to analyze the opportunity to replicate the project approach in other sections of the same Rio Geba, in other estuaries of Guinea-Bissau, or possibly in other neighbor Countries with similar tidal watercourses (Senegal, Gambia and Guinea).

6) Construction of a testing plant

One or eventually two sites (if the conditions encountered were very favorable), among those identified in the Master Plan, will be selected in order to develop a testing plant generating electricity from tidal power, to be connected to a well extracting groundwater (or two if they were conveniently close).

7) Capacity Building of Local Water Management Company to Manage Proposed Tidal Systems

On the basis of the technical experience developed during the previous phases of the project, the team will prepare and deliver a capacity building activity addressed to selected technicians from the local water management Company, aimed at training on operation and maintenance practices for the proposed tidal energy plants.

The seminar will include also aspects related to the possible replication of the initiative in other similar locations, such as site selection, most adequate equipment identification and technical feasibility assessment.
Possibly the training activity will be addressed also to technicians from neighbor Countries.

DURATION AND COSTS OF THE PROPOSED ACTIVITIES
The total duration of the proposed activities is estimated in 36 months. The 2 main actions above may be carried out in parallel and concomitantly.
The predictable cost of the project is € 1,310,000. The grant requested by the proposers is 74% of the total cost.

PARTNERS INVOLVEMENT, ROLES AND RELATIONSHIPS
The following partners are involved in the project:
- IREN SpA (water supply company in Genoa, Turin and other Italian cities): lead organization, responsible of the water management optimization and good practices dissemination;
- University of Genoa, department of Civil and Hydraulic engineering, implicated in scientific activities;
- D'Appolonia SpA, Engineering Society, in charge of technical challenges of the project;
- PS76 ONLUS (NGO for Development Cooperation Promotion), coordinator of the project in Europe and in Guinea-Bissau;
- Lusagua Serviços Ambientais (Aquapor Group) Portuguese water services Company, involved in technical collaboration with the project lead organization;
- Litostroj Power, Slovenian turbines producer facing technical challenges concerning the turbine prototype;
- Guinea-Bissau Government (Energy Ministry), taking general strategic decisions and providing all the required permits;
- EAGB, providing site data and implementing national water strategies;
- AST Sarl, implicated in infrastructures development and realization.

Neighbouring Countries Governments (Senegal, Gambia and Guinea) have been contacted to highlight project proposal replicability in their territory.

3 - SUSTAINABILITY OF THE ACTION

INITIAL RISK ANALYSIS AND EVENTUAL CONTINGENCY PLANS
Some risks relating to the constraints and availability of proper installation sites have been considered. After a proper brainstorming and investigation the proposers have been reassured about the existence of several places characterized by suitable conditions for the purpose in the area object of the proposed project.
In particular a preliminary survey and detailed studies have been carried out, leading to the identification of several potential installation sites. Moreover, adequate simulations about water volumes involved in the hydropower plant and the related energy production will be carried out since the beginning of the project.
No contingency plans are therefore foreseen for this aspect.

MAIN PRECONDITIONS AND ASSUMPTIONS DURING AND AFTER THE IMPLEMENTATION PHASE
No preconditions and assumptions are foreseen during and after the implementation plan. Particularly the choice of the installation sites will be aimed at keeping as lower as possible the costs linked to the civil works and the infrastructures necessary to assure a proper installation of the hydraulic machine.

SUSTAINABILITY AFTER COMPLETION OF THE ACTION
The project is aimed at local sustainable development and environmentally friendly because:
- improve water resource management and governance;
- provides the use of a renewable energy source;
- allows saving diesel oil for generators, contributing to reduce Bissau pollution;
- does not provide the construction of important civil work, but only some minor infrastructures which may be well introduced into the environment.

The economic benefit of a renewable energy source that can be easily predicted far in advance is of great importance.
All technologies are fully compatible with the level of knowledge of the technicians, after adequate training activity; furthermore technology of special equipment to be purchased from abroad is in line with that already existing in the country.
Some AGB technicians studied abroad the tidal energy matter and are therefore able to collaborate to the project realization and maintenance.

II. CHECKLIST FOR CONCEPT NOTE

BEFORE SENDING YOUR CONCEPT NOTE, PLEASE CHECK THAT EACH OF THE FOLLOWING COMPONENTS IS COMPLETE AND RESPECTS THE FOLLOWING CRITERIA :	**To be filled in by the applicant**		**To be filled in by the European Commission**	
Title of the Proposal:	**Yes**	**No**	**Yes**	**No**
1. The instructions for Concept Notes, published for this call for proposals, have been followed	X			
2. The proposal is typed and is in English, French, Spanish or Portuguese.	X			
3. One paper original and 3 copies are included	X			
4. An electronic version of the Concept Note (CD-Rom) is enclosed	X			
5. The duration of the action is equal to or lower than 60 months(the maximum allowed)	X			
6. The duration of the action is equal to or higher than 24 months (the minimum allowed)	X			
7. The requested grant is equal to or higher than €250.000 (the minimum allowed)	X			
8. The requested grant is equal to or lower than €1.000.000 (the maximum allowed)	X			
9. The requested grant is equal to or lower than 75% of the total eligible costs (maximum percentage allowed)	X			
10. The action will be implemented in an eligible country(ies)	X			
11. The Declaration by the applicant has been filled in and is being sent with the Concept Note	X			
12. The Applicant is registered in PADOR and all supporting documents have been uploaded. In case a derogation is being requested, Annex K-A and all supporting documents are being sent with the Concept Note.	X			

III. DECLARATION BY THE APPLICANT FOR CONCEPT NOTE

The applicant, represented by the undersigned, being the authorised signatory of the applicant, and in the context of the present application, representing any partners in the proposed action, hereby declares that

the applicant has the sources of financing and professional competence and qualifications to carry out the proposed action;

the applicant undertakes to comply with the obligations foreseen in the partnership statement of the grant application form and with the principles of good partnership practice;

the applicant is directly responsible for the preparation, management and implementation of the action with its partners and is not acting as an intermediary;

the applicant and its partners are not in any of the situations excluding them from participating in contracts which are listed in Section 2.3.3 of the Practical Guide to contract procedures for EC external actions (available from the following Internet address: http://ec.europa.eu/europeaid/work/procedures/implementation/index_en.htm). Furthermore, it is recognised and accepted that if we participate in spite of being in any of these situations, we may be excluded from other procedures in accordance with section 2.3.5 of the Practical Guide;

the applicant and each partner are in a position to deliver the supporting documents stipulated under section 2.4 of the Guidelines for Applicants;

the applicant and each partner are eligible in accordance with the criteria set out under sections 2.1.1 and 2.1.2 of the Guidelines for Applicants;

if recommended to be awarded a grant, the applicant accepts the contractual conditions as laid down in the Standard Contract annexed to the Guidelines for Applicants (Annex G);

the applicant and its partners are aware that, for the purposes of safeguarding the financial interests of the Communities, their personal data may be transferred to internal audit services, to the European Court of Auditors, to the Financial Irregularities Panel or to the European Anti-Fraud Office.

Signed on behalf of the applicant

Name	**Roberto Bazzano**
Signature	
Position	**IREN Acqua Gas Chief Executive Officer**
Date	**October, the 1st, 2010**